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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/010,573 | 11/13/2001 | William A. Sullivan | WAS-1 | 4330 |

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| EXAMINER |
|---|
| LAMB, TWYLER MARIE |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2622 | 6 |

DATE MAILED: 03/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/010,573 | SULLIVAN ET AL. | |
| | Examiner | Art Unit | |
| | Twyler M. Lamb | 2622 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *13 November 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-8, 10-11 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morikawa (US 5,854,957) in view of Brady et al. (Brady) (US 6,100,804).

With regard to claim 1, Morikawa discloses a method for reducing a thickness of a compressible substrate bearing an image, the substrate having an initial thickness (which reads on performing "thermal compression bonding") (col 5, lines 45-65; col 7, lines 1-11), comprising: applying a compressive force to the substrate to compress the substrate to a thickness less than the initial thickness (which reads on performing "thermal compression bonding") (col 5, lines 45-65; col 7, lines 1-11), and concurrently applying heat to the substrate (col 7, lines 1-11).

Morikawa differs from claim 1 in that he does not clearly teach the compressive force selected to preclude the substrate returning to the initial thickness after removal of the compressive force therefrom.

Brady discloses the use of "thermal compression bonding" (col 8, lines 1-10) that includes reducing the thickness of a compressible substrate bearing an image where

having an initial thickness comprises applying compressive force selected to preclude the substrate returning to the initial thickness after removal of the compressive force therefrom (col 3, lines 5-40; col 7, lines 27-40; col 8, lines 1-10)

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Morikawa to include applying compressive force selected to preclude the substrate returning to the initial thickness after removal of the compressive force therefrom as taught by Brady. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified by the teaching of Brady to manufacture thinner wafers as taught by Brady in col 3, lines 6-10.

With regard to claim 2, Morikawa differs from claim 2 in that he does not clearly teach wherein the compressive force is adjustable so as to achieve a desired thickness for the substrate after compression.

Brady discloses the use of "thermal compression bonding" (col 8, lines 1-10) that includes the compressive force is adjustable so as to achieve a desired thickness for the substrate after compression (which reads on reducing the thickness to less than approximately 200 microns {a desired thickness}) (col 3, lines 5-40; col 7, lines 27-40; col 8, lines 1-10).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Morikawa to include the compressive force is adjustable so as to achieve a desired thickness for the substrate after compression as taught by Brady. It would have been obvious to one of ordinary skill in the art at the

time of the invention to have modified by the teaching of Brady to manufacture thinner wafers as taught by Brady in col 3, lines 6-10.

With regard to claim 3, Morikawa also discloses wherein the compressive force is applied by passing the substrate through a roller nip formed between two adjacent rollers (binder transport roller 632) (col 7, lines 4-7), and where the concurrent application of heat is accomplished by heating at least one of the rollers (col 7, lines 8-11).

With regard to claim 4, Morikawa also discloses wherein the pressure applied to the substrate as it passes through the nip is in the range of 0 to 400 pounds per linear inch (which reads on being subjected to compression for a predetermined time Note: The compression force is understood to be somewhere in the range of 0 to 400 pounds per linear inch.) (col 7, lines 9-11).

With regard to claim 5, Morikawa also discloses wherein the recited steps are repeatedly applied to a plurality of substrate sheets which are further processed to form a bound document consisting essentially of reduced thickness pages (which reads on a predetermined number of sheets being conveyed through the binder) (col 7, lines 1-7).

With regard to claim 6, Morikawa also discloses wherein the compressive force is applied by passing the substrate through a roller nip between two adjacent rollers (binder transport roller 632) (col 7, lines 4-7).

Morikawa differs from claim 6 in that he does not clearly teach the compressive force is adjustable by adjusting a nip pressure so as to produce a compressed substrate having a thickness in the range of 100% to 50% that of the initial thickness.

Brady discloses the use of "thermal compression bonding" (col 8, lines 1-10) that includes the compressive force is adjustable so as to achieve a desired thickness for the substrate after compression (which reads on reducing the thickness to less than approximately 200 microns {with in the range of 100% to 50% of the initial thickness}) (col 3, lines 5-40; col 7, lines 27-40; col 8, lines 1-10).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Morikawa to include the compressive force is adjustable so as to achieve a desired thickness for the substrate after compression as taught by Brady. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified by the teaching of Brady to manufacture thinner wafers as taught by Brady in col 3, lines 6-10.

With regard to claim 7, Morikawa discloses a method for reducing a thickness of a compressible substrate bearing an image (which reads on performing "thermal compression bonding") (col 5, lines 45-65; col 7, lines 1-11), comprising forming an image on a substrate (col 5, lines 19-30), and concurrently compressing and heating the imaged substrate to transform the substrate to the compressed state without substantially distorting the image (which reads on performing "thermal compression bonding") (col 5, lines 45-65; col 7, lines 1-11).

Morikawa differs from claim 7 in that he does not clearly teach the substrate transformable from an imaging state having a first thickness to a compressed state having a second thickness thinner than the first.

Brady discloses the use of "thermal compression bonding" (col 8, lines 1-10) that includes reducing the thickness of a compressible substrate bearing an image where having an initial thickness comprises applying compressive force selected to preclude the substrate returning to the initial thickness after removal of the compressive force therefrom (col 3, lines 5-40; col 7, lines 27-40; col 8, lines 1-10).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Morikawa to include the substrate transformable from an imaging state having a first thickness to a compressed state having a second thickness thinner than the first thickness as taught by Brady. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified by the teaching of Brady to manufacture thinner wafers as taught by Brady in col 3, lines 6-10.

With regard to claim 8, Morikawa also discloses wherein the image is produced on the substrate using a toner disposition process (col 5, lines 31-39), and wherein the step of concurrently compressing and heating the imaged substrate causes the toner image to smoothen and produces an improved glossy image quality (which reads on removing the remaining toner downstream and the toner being applied by a thermal fixing unit) (col 5, line 59 – col 6, line 2).

With regard to claim 10, Morikawa discloses an apparatus (copy machine 1) for producing a compressed substrate having an image thereon (which reads on performing "thermal compression bonding") (col 5, lines 45-65; col 7, lines 1-11), comprising: an imaging station (printer unit PRT) for rendering an image onto the

substrate when said substrate is in a uncompressed state (col 5, lines 19-30); and compressing station (bind unit 631), operatively associated with the imaging station, to receive an uncompressed substrate with an image thereon and to apply a sufficient compressed force to the imaged substrate to reduce a thickness of the substrate (which reads on performing "thermal compression bonding") (col 5, lines 45-65; col 7, lines 1-11.

Morikawa differs from claim 10 in that he does not clearly teach producing a compressed substrate with an image thereon.

Brady discloses the use of "thermal compression bonding" (col 8, lines 1-10) that includes reducing the thickness of a compressible substrate bearing an image where having an initial thickness comprises applying compressive force selected to preclude the substrate returning to the initial thickness after removal of the compressive force therefrom (col 3, lines 5-40; col 7, lines 27-40; col 8, lines 1-10).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Morikawa to include producing a compressed substrate with an image thereon as taught by Brady. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified by the teaching of Brady to manufacture thinner wafers as taught by Brady in col 3, lines 6-10.

With regard to claim 11, Morikawa also discloses wherein the compressing station includes at least two rollers (binder transport roller 632) forming a nip therebetween, and where the uncompressed substrate may be fed into the nip as the rollers are rotated so as to concurrently feed the substrate therethrough while

compressing the substrate (which reads on conveying the predetermined number of pages through the binder) (col 7, lines 4-7).

With regard to claim 12, Morikawa also discloses wherein the compressive force applied to the substrate as it passes through the nip is in the range of 0 to 400 pounds per linear inch (which reads on being subjected to compression for a predetermined time Note: The compression force is understood to be somewhere in the range of 0 to 400 pounds per linear inch.) (col 7, lines 9-11).

With regard to claim 16, Morikawa also discloses comprising at least one stripper finger (switching claw 601) to assist with the removal of the substrate from the roller surface after the substrate passes through the nip (which reads on guiding the sheet) (col 6, lines 54-57).

With regard to claim 17, Morikawa discloses a method for reducing a thickness of a compressible substrate bearing an image, the substrate having an initial thickness (which reads on performing "thermal compression bonding") (col 5, lines 45-65; col 7, lines 1-11), including preparing a substrate comprising paper making fibers and a low density bulking material so as to produce a substrate having a first density (which reads on providing the sheet for the image to be printed) (col 5,lines 36-39) and applying heat to the substrate while applying the compressive force (which reads on performing "thermal compression bonding") (col 5, lines 45-65; col 7, lines 1-11).

Morikawa differs from claim 17 in that he does not clearly teach applying a compressive force to the substrate to compress the substrate to a thickness less than the initial thickness, thereby increasing the density of the substrate to a second density

greater than the first density, the compressive force selected to preclude the substrate from returning to the initial thickness after removal of the compressive force

Brady discloses the use of "thermal compression bonding" (col 8, lines 1-10) that includes reducing the thickness of a compressible substrate bearing an image where having an initial thickness comprises applying compressive force selected to preclude the substrate returning to the initial thickness after removal of the compressive force therefrom (col 3, lines 5-40; col 7, lines 27-40; col 8, lines 1-10).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Morikawa to include the substrate transformable from an imaging state having a first thickness to a compressed state having a second thickness thinner than the first thickness as taught by Brady. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified by the teaching of Brady to manufacture thinner wafers as taught by Brady in col 3, lines 6-10.

With regard to claim 18, Morikawa also discloses wherein the low density bulking material is compressible (which reads on a predetermined number of sheets passing through the binder and applying compression) (col 7, lines 9-11).

With regard to claim 19, Morikawa also discloses wherein the low density bulking material includes a structure that is collapsible so as to increase its density (which reads on a predetermined number of sheets passing through the binder and applying compression) (col 7, lines 9-11).

With regard to claim 20, Morikawa also discloses wherein the low density bulking material is a corrugated layer that forms part of the substrate matrix (which reads on a predetermined number of sheets) (col 7, lines 1-4).

3. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morikawa (US 5,854,957) in view of Brady et al. (Brady) (US 6,100,804) as applied to claim 8 above, and further in view of Matsuda et al. (Matsuda) (US 5,925,446).

With regard to claim 9, Morikawa as modified differs from claim 9 in that he does not clearly teach including the step of applying a release agent to a surface that contacts the image during the compressing and heating step as to prevent the image from transferring to the surface.

Matsuda discloses an image forming method that includes the step of applying a release agent to a surface that contacts the image during the compressing and heating step as to prevent the image from transferring to the surface (col 4, lines 26-35).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have further modified Morikawa to include the step of applying a release agent to a surface that contacts the image during the compressing and heating step as to prevent the image from transferring to the surface as taught by Matsuda. It would have been obvious to one of ordinary skill in the art at the time of the invention to have further modified Morikawa by the teaching of Matsuda go prevent image stain on a second surface as taught by Matsuda in col 4, lines 26-35.

4. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morikawa (US 5,854,957) in view of Brady et al. (Brady) (US 6,100,804) as applied to claim 8 above, and further in view of Kinoshita et al. (Kinoshita) (US 5,287,150).

With regard to claim 13, Morikawa as modified differs from claim 13 in that he does not clearly teach at least one of said rollers includes a resilient outer surface so as to compensate for any unevenness in the rollers.

Kinoshita discloses a developing roller that includes at least one of said rollers includes a resilient outer surface so as to compensate for any unevenness in the rollers (col 9, lines 46-55).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have further modified Morikawa to include at least one of said rollers includes a resilient outer surface so as to compensate for any unevenness in the rollers as taught by Kinoshita. It would have been obvious to one of ordinary skill in the art at the time of the invention to have further modified Morikawa by the teaching of Kinoshita to aid in preventing toner grains from penetrating the roller as taught by Kinoshita in col 9, lines 46-55.

With regard to claim 14, Morikawa as modified differs from claim 14 in that he does not clearly teach at least one roll is formed from aluminum and an outer surface thereof is anodized.

Kinoshita discloses a developing roller that includes at least one roll is formed from aluminum and an outer surface thereof is anodized (col 6, lines 29-50).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have further modified Morikawa to include at least one roll is formed from aluminum and an outer surface thereof is anodized as taught by Kinoshita. It would have been obvious to one of ordinary skill in the art at the time of the invention to have further modified Morikawa by the teaching of Kinoshita to aid in preventing toner grains from penetrating the roller as taught by Kinoshita in col 9, lines 46-55.

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morikawa (US 5,854,957) in view of Brady et al. (Brady) (US 6,100,804) as applied to claim 8 above, and further in view of Kinoshita et al. (Kinoshita) (US 5,287,150) and Matsuda et al. (Matsuda) (US 5,925,446).

With regard to claim 15, Morikawa as modified differs from claim 15 in that he does not clearly teach at least one roll further includes a urethane coating applied over the outer surface thereof.

Matsuda discloses an image forming method that includes the step of applying a release agent to a surface that contacts the image during the compressing and heating step as to prevent the image from transferring to the surface (col 4, lines 26-35).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have further modified Morikawa to include Matsuda discloses an image forming method that includes the step of applying a release agent to a surface that contacts the image during the compressing and heating step as to prevent the image from transferring to the surface (col 4, lines 26-35).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have further modified Morikawa to include the step of applying a release agent to a surface that contacts the image during the compressing and heating step as to prevent the image from transferring to the surface as taught by Matsuda. It would have been obvious to one of ordinary skill in the art at the time of the invention to have further modified Morikawa by the teaching of Matsuda go prevent image stain on a second surface as taught by Matsuda in col 4, lines 26-35.
as taught by Matsuda. It would have been obvious to one of ordinary skill in the art at the time of the invention to have further modified Morikawa by the teaching of Matsuda go prevent image stain on a second surface as taught by Matsuda in col 4, lines 26-35.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Twyler Lamb whose telephone number is 703 - 305-8823. The examiner can normally be reached on M-TH (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward L Coles can be reached on 703-305-4712. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-6036 for regular communications and 703-872-9314 for After Final communications.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, DC 20231

or faxed to:

(703) 872-9314

(for informal or draft communications, such as proposed amendments to be discussed at an interview; please label such communications "PROPOSED" or "DRAFT")

or hand-carried to:

Crystal Park Two
2121 Crystal Drive
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Twyler Lamb

March 24, 2003